

DIDACTIC UNIT 4: FRACTIONS

LEVEL: FIRST OF ESO / BILINGUAL GROUP

YEAR: 2010/2011

Timing: 8 SESSIONS / QUARTER 1

SPECIFIC OBJECTIVES

- a) Understand the concept of fractions.
- b) Knowing the properties of fractions.
- c) Use and manage equivalent fractions.
- d) Learn to compare fractions.
- e) Perform operations with fractions: addition, subtraction, multiplication, division.

LANGUAGE OBJECTIVES

- a) Use specific language oral and written in both languages.
- b) Know set out the doubts and resolve them orally.
- c) Read scientific texts in English to help students in their future professional, as many times shall be expressed in English.
- f) Show to students that English is the language of communication at internationally.
- g) Use comprehension strategies to figure out unfamiliar words.
- h) Use scientific terminology common language in order to improve the rigor and precision in communication.

CONTENTS

- 1. Fractional numbers
 - Concept of a fraction
 - Fraction of a quantity
- 2. Mixed numbers and improper fractions
 - Proper and improper fractions
 - Mixed numbers
 - Converting from improper fractions to mixed numbers
- 3. Equivalent fractions
 - Equivalent fractions
 - Simplest form
- 4. Comparing fractions
 - Fractions with the same denominator
 - Fractions with different denominator
- 5. Adding and subtracting fractions
 - Fractions with the same numerator
 - Fractions with different denominator
- 6. Multiplying and dividing fractions
 - Multiplying fractions
 - Dividing fractions

EVALUATION CRITERIA

Assess whether the student knows:

- Simplifying a fraction.
- Differentiate between equivalent fractions and those that are not.
- Perform operations with fractions.
- Clearly state the work done.
- Searching the Internet and use it properly.

POWER

Maths

- a) Understand the use of fractions.
- b) Assess the use of fractions in the representation of numbers.

Linguistics

- a) Understand statements to solve problems in which you must use the calculation of fractions.

Digital treatment

- a) Search for information on the Internet properly and adapt to our needs.

Learning to learn

- a) Be aware of the development of learning the content of this unit.

Autonomy and initiative

- a) Deciding which procedure is more valid to a problem.

ACTIVITIES

There will be six groups, one for each general content of the topic, which will make a presentation with examples of exercises related to that content and present them orally. These examples should be related to everyday life situations. To do this, check the Internet resources that will be offered. Here are some examples such as those that may expose:

1. Fractional numbers

Concept of a fraction

Example 1

If we cut a cake into two equal pieces, then eat one of them, we say that we have eaten $\frac{1}{2}$ (half) a cake.



If we cut a cake into five equal pieces, then eat three of them, we say that we have eaten $\frac{3}{5}$ (three fifths) of a cake.

$\frac{1}{2}$ and $\frac{3}{5}$ are examples of fractions - parts of a whole.

Fraction of a quantity

Example 1

What if four people want to share a box of 24 chocolates?



- ☺ A practical way would be for each person to take it in turns to choose a chocolate, until all the sweets have gone. They would have six chocolates each.



- ☺ You could also find the answer by working out a **quarter** of the total number of chocolates:

$\frac{1}{4}$ of 24 is easy to do, just divide 24 by 4.

$$24 \div 4 = 6.$$

So the answer is **six chocolates**

2. Mixed numbers and improper fractions

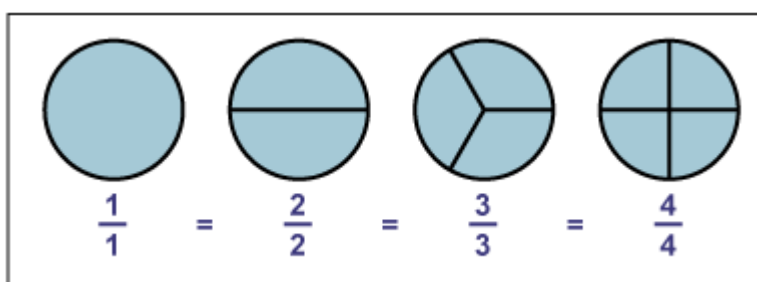
Proper and improper fractions

- ☉ In all the fractions we have seen so far, the top number (numerator) has been smaller than the bottom number (denominator).

e.g. $\frac{3}{4}$, $\frac{2}{7}$, $\frac{5}{6}$, ...

This means that these fractions are always less than one (**proper fractions**)

- ☉ A whole number can be written as $\frac{2}{2}$, $\frac{3}{3}$, $\frac{4}{4}$, etc. and they are equal to one



- ☉ If we want to work with numbers greater than one, we need to use **improper fractions**. Improper fractions have a bigger numerator than denominator.

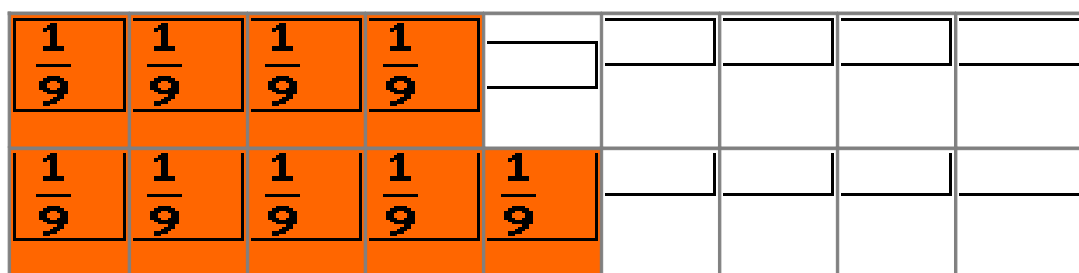
e.g. $\frac{5}{4}$, $\frac{7}{2}$, ...

4. Comparing fractions

Fractions with the same denominator

If two fractions have the same denominator then they are easy to compare.

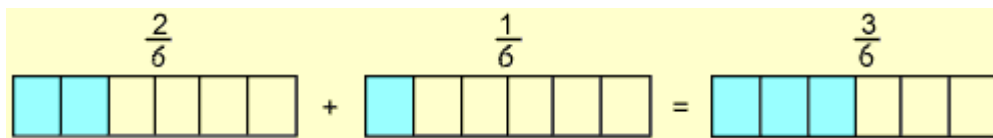
Example: Which is larger $\frac{4}{9}$ or $\frac{5}{9}$?



$\frac{4}{9}$ is less than $\frac{5}{9}$ (because 4 is less than 5)

Fractions with the same numerator

It is easy to add fractions when the numbers on the bottom are the same.



All you need to do is add the tops of the fractions together.

Examples:

$$\frac{2}{9} + \frac{5}{9} = \frac{7}{9}$$

Sometimes you need to **cancel down** the answer to its simplest terms

$$\frac{3}{10} + \frac{1}{10} = \frac{4}{10} = \frac{2}{5}$$

RESOURCES

Spanish webs

http://recursostic.educacion.es/descartes/web/materiales_didacticos/fracciones/

English webs

<http://www.visualfractions.com/>

<http://www.visualfractions.com/Games.htm>

<http://www.youtube.com/watch?v=Mnu16kCRW4U>

Videos

<http://www.youtube.com/watch?v=xjhUEOPJx7A>

<http://www.youtube.com/watch?v=FrmL5gldBjA>

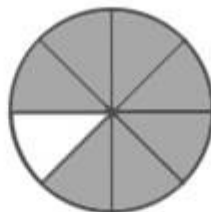
ACTIVITIES CARDS

Along the theme activity cards will be made dependent on the content we are seeing such as the following:

Introduction to fractions Worksheet 1

Match each of the fractions with the correct diagram.

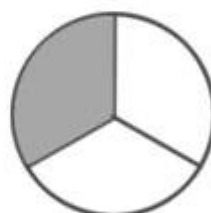
$$\frac{1}{3}$$



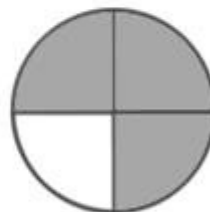
$$\frac{3}{4}$$



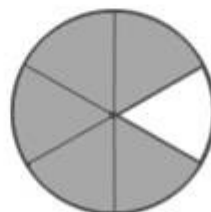
$$\frac{7}{8}$$



$$\frac{1}{10}$$



$$\frac{1}{5}$$



$$\frac{5}{6}$$



Introduction to fractions Worksheet 3

Work out the fractions below and say which of the diagrams are equivalent to $\frac{1}{2}$



Fraction:

Same as $\frac{1}{2}$?

YES

NO

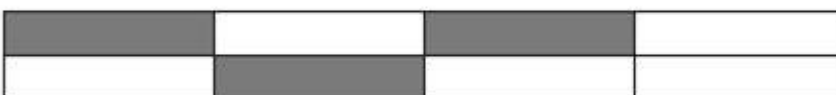


Fraction:

Same as $\frac{1}{2}$?

YES

NO

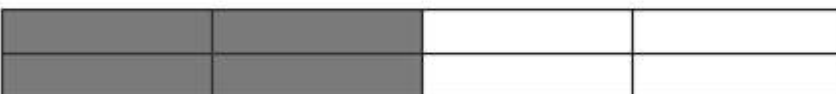


Fraction:

Same as $\frac{1}{2}$?

YES

NO



Fraction:

Same as $\frac{1}{2}$?

YES

NO

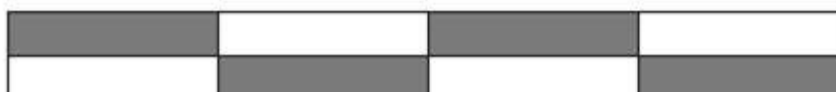


Fraction:

Same as $\frac{1}{2}$?

YES

NO



Fraction:

Same as $\frac{1}{2}$?

YES

NO

Simplifying fractions Worksheet 1

Mark the fractions which can be simplified.

1. $\frac{3}{4}$ ☐

2. $\frac{1}{5}$ ☐

3. $\frac{2}{6}$ ☐

4. $\frac{6}{12}$ ☐

5. $\frac{5}{6}$ ☐

6. $\frac{2}{4}$ ☐

7. $\frac{3}{5}$ ☐

8. $\frac{4}{16}$ ☐

9. $\frac{2}{1}$ ☐

10. $\frac{5}{15}$ ☐

Comparing fractions - Worksheet 2

- i** Try these questions and see how you do. You can use the fraction wall Factsheet to help you find the answers.

Compare these pairs of fractions. Put in the correct sign between them:

equals =

more than >

less than <

Examples:

$$\frac{5}{10} = \frac{1}{2}$$

$$\frac{1}{2} > \frac{1}{4}$$

$$\frac{1}{4} < \frac{1}{2}$$

The first one has been done for you

$$\frac{3}{5} > \frac{2}{5}$$

$$\frac{2}{5} \quad \frac{7}{8}$$

$$\frac{3}{8} \quad \frac{7}{9}$$

$$\frac{2}{3} \quad \frac{2}{7}$$

$$\frac{9}{10} \quad \frac{9}{11}$$

$$\frac{3}{6} \quad \frac{4}{8}$$